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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/991,287	11/14/2001	Richard W. Strobel	01-651	3691

7590

11/14/2003

Barry L. Kelmachter
BACHMAN & LaPOINTE, P.C.
Suite 1201
900 Chapel Street
New Haven, CT 06510-2802

EXAMINER

ZIMMERMAN, JOHN J

ART UNIT

PAPER NUMBER

1775

DATE MAILED: 11/14/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/991,287

Applicant(s)

STROBEL, RICHARD W.

Examiner

John J. Zimmerman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 7-12, 14-21, 23-29, 31, 33-35 and 37-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-12, 14-21, 23-29, 31, 33-35 and 37-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

THIRD OFFICE ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 24, 2003 has been entered.

Amendments and Responses

2. The Amendment received August 25, 2003 has been entered as instructed by applicant in the papers filed under 37 CFR 1.114. The Response to Advisory Action received September 24, 2003 has been considered in the construction of this Office Action. Claims 1-4, 7-12, 14-21, 23-29, 31, 33-35 and 37-51 are pending in this application.

Claim Rejections - 35 USC § 112, First Paragraph

3. Claims 1-4, 7-12, 14-21, 23-29, 31, 33-35 and 37-51 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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4. It is not clear from applicant's original disclosure how applicant has determined the claimed hardness data in "GPa" units. Traditionally, hardness values are presented as values represented by standardized hardness scales (e.g. Brinell, Rockwell, Vickers, Knoop, etc. . .) and are obtained by specific hardness tests with specified indenters and loads. No such information is provided by the original disclosure. The applicant's original disclosure does not shed light on how applicant's hardness values were determined and how they came to be presented in "GPa" units. It is not clear from applicant's specification what applicant's hardness values represent.

Claim Rejections - 35 USC § 112, Second Paragraph

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-4, 7-12, 14-21, 23-29, 31, 33-35 and 37-51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. It is not clear how applicant has determined the claimed hardness data in "GPa" units. Typically, traditional hardness values are presented as values represented by standardized hardness scales (e.g. Brinell, Rockwell, Vickers, Knoop, etc. . .) and are obtained by specific hardness tests with specified indenters and loads. No such information is provided in the applicant's original disclosure. The applicant's original disclosure does not shed light on how

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applicant's hardness values were determined and how they came to be presented in "GPa" units. Since it is not clear from applicant's specification what applicant's hardness values in the claims represent, the claims are indefinite. Clarification of this issue is necessary in order to ascertain how to interpret the hardness data in the pending claims.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action.

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

9. Claims 1-3 and 37-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Lupfer (U.S. Patent 3,503,721).

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10. Lupfer discloses hot dipping copper based electrical components in a tin solder containing 2-10% silver (e.g. see column 2, lines 30-50; column 3, lines 2-5). Although Lupfer's preferred embodiment is a tin-silver eutectic having 3.5% silver which melts at 221 °C, the rest of Lupfer's disclosed 2-10% silver range would be expected to melt at higher temperatures since the rest of the range would not be lower melting point eutectic compositions. The melting temperatures of the solder compositions in this range would be inherent to the various tin-silver compositions. As noted in applicant's specification at page 13, the melting point of a 90-10 tin-silver composition is 310 °C (590°F) which easily meets the limitations of the bath temperature in independent claim 39. In addition, the hardnesses of the solders would also be inherent to the disclosed tin-silver compositions. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

11. Claims 1-4 and 51 are rejected under 35 U.S.C. 102(b) as being anticipated by Arai (U.S. Patent 5,902,472).

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12. Arai '472 discloses plating substrates with a tin-silver composition (e.g. see Tables 1, 4, 12, 15, 17, 18). The melting temperatures of the solder compositions in examples would be inherent to the various tin-silver compositions. In addition, the hardnesses of the solders would also be inherent to the disclosed tin-silver compositions. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977). Although it is noted that the claims may specify that the coating is "non-electroplated" and Arai uses electroplating, when there is a substantially similar product, as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct not the examiner to show that the same process of making, see *In re Brown*, 173 U.S.P.Q 685, and *In re Fessmann*, 180 U.S.P.Q. 324. There is no factual evidence of record that coatings produced by all other processes than an electroplating process are physically and patentably distinct from the coatings of Arai. The tin-silver solder coatings are subject to melting (e.g. see solderability tests in the Embodiments) and the melting step would leave tin-silver solder coatings with a final microstructure consistent with melted tin-silver alloy and not a microstructure associated with electroplating. Regarding claim 51, there is no indication that the substrates of Arai are discontinuous.

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13. Claims 1-4, 7-12, 14-18, 20-21, 23-28, 31, 33-35 and 51 are rejected under 35

U.S.C. 102(b) as being anticipated by Arai (U.S. Patent 5,948,235).

14. Arai '235 discloses plating substrates with tin-silver-copper compositions (e.g. see column 4, lines 54-59). The melting temperatures of the compositions in the examples would be inherent to the various tin-silver compositions. In addition, the hardnesses of the solders would also be inherent to the disclosed tin-silver compositions. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977). Although it is noted that the claims may specify that the coating is "non-electroplated" and Arai uses electroplating, when there is a substantially similar product, as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct not the examiner to show that the same process of making, see *In re Brown*, 173 U.S.P.Q 685, and *In re Fessmann*, 180 U.S.P.Q. 324. There is no factual evidence of record that coatings produced by all other processes than an electroplating process are physically and patentably distinct from the coatings of Arai. The tin-silver solder coatings are subject to melting (e.g. see Embodiments in

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column 4) and the melting step would leave tin-silver solder coatings with a final microstructure consistent with melted tin-silver alloy and not a microstructure associated with electroplating.

Regarding claim 51, there is no indication that the substrates of Arai are discontinuous.

15. Claims 7-12, 14-18, 20-21, 23-28, 31, 33-35, 37-41, 46-47 and 50-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Harada (Japanese publication 2000-080460).

16. Harada discloses plating substrates with a tin-silver-copper solder composition (e.g. see paragraph [0008]). The silver content can be from 0.5% - 10.0% and the copper content can be from 0.01% - 2.0%. The melting temperatures of the solder compositions in this range would be inherent to the various tin-silver compositions. In addition, the hardnesses of the solders would also be inherent to the disclosed tin-silver compositions. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977). Regarding claim 51, there is no indication that the substrates of Harada are discontinuous.

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Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 1-4, 7-12, 14-21, 23-29, 31, 33-35 and 37-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brinkmann (U.S. Patent 5,075,176) in view of applicant's disclosure of the prior art.

19. Brinkmann discloses hot dipping metal bands for making copper based electrical plug connectors in a tin solder containing up to 8.5% silver (e.g. see column 1, lines 45-54; column 2, lines 38-50; Examples 1 and 2; claims 1-4) in a thickness of 0.3-12 μm (\approx 0.00001-0.0005 inches). Brinkman specifically singles out silver containing tin compositions in the examples and teaches endpoints directly in applicant's claimed range (e.g. see Example 1 and claim 4). For instance, in Example 1, a tin composition containing 1% silver and a negligibly small amount of phosphorus (three hundredth of a percent) is used. It is noted that since there is no indication in Brinkmann's "Detailed Description" that phosphorus has a function in the coating or is considered an additive for any reason, one of ordinary skill in the art would be lead to believe that the phosphorus in the example may simply be an impurity in the bath or at most may be an additive that is clearly not necessary to the tin-silver bath composition of Brinkmann and therefore may be omitted. The melting temperatures of the solder compositions in this range

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would be inherent to the various tin-silver compositions. In addition, the hardnesses of the solders would also be inherent to the disclosed tin-silver compositions. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

Brinkmann clearly teaches that additional constituents such as copper, silicon, antimony, zinc, iron and manganese can be added and teaches that Brinkmann's alloying additions improve the plug properties by affecting the hardness of the coating compositions (e.g. see the discussion in Example 1). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to select the portion of the prior art's range which is within the range of applicant's claims because it has been held to be obvious to select a value in a known range by optimization for the best results, see *In re Aller, et al.*, 105 U.S.P.Q. 233. The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Malagari*, 182 USPQ 549.

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20. Regarding claims to specific substrate materials (e.g. claims 19 and 29), applicant's disclosure (e.g. page 7, lines 6-11) shows copper-tellurium to be a typical composition for automobile connectors in the prior art and therefore the use of typical connector substrate compositions for the connectors of Brinkmann would have been obvious to one of ordinary skill in the art at the time the invention was made because Brinkmann's invention would be understood to apply to proven connector substrate compositions. It is axiomatic that consideration of the prior art cited by the examiner must, of necessity, include consideration of the admitted state of the art found in applicant's specification, *In re Davis*, 305 F.2d 501, 134 USPQ 256 (CCPA 1962); *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986). Admitted knowledge in the prior art may be used in determining patentability of the claimed subject matter, *In re Nomiya*, 509 F.2d 566, 184 USPQ 607 (CCPA 1975). Regarding claims specific to batch and/or continuous dipping processes, the reference specifically discloses that dipping processes should be used and selecting batch, semicontinuous or continuous processes to apply the coating is a mere matter of determining which process works more economically for the amount of material to be coated. It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the coating process for scale of the coating operation. A review of the applicant's disclosure shows no patentable distinction in selecting any of these conventional dipping processes and barring evidence to the contrary, using a batch, a semicontinuous or a continuous process is not seen to be a patentable distinction over the teachings of Brinkmann. In addition, optimizing the bath dwell time for the type of hot dipping process (e.g. claim 44) would be within the level of ordinary skill in the art and using lubricants

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(e.g. claim 45) to facilitate forming of the articles from the hot dipped stock would be understood to be conventional in this field of manufacture.

Response to Arguments

21. Applicant's arguments submitted with the amendments to the claims on March 25, 2003 have been carefully considered but are not persuasive with regards to the remaining rejections.

22. Applicant argues that the coating hardness requirements in the claims overcomes the references. In support of applicant's argument, the 132 Declaration of Richard Stroebel (Paper No. 9, received August 25, 2003), Stroebel cites www.matweb.com as evidence that 95% tin - 5% silver solder has a hardness of "0.032 GPa". It is not clear to the examiner where Stroebel obtained the hardness data on www.matweb.com or how it was determined. The closest data found by the examiner on www.matweb.com was that Tin-Silver Solder (95Sn-5Ag), ASTM B 32 Grade Sn95, can have a "tensile strength", ultimate, of 32 MPa (0.032GPa) as cast solder aged 14 days. Since "tensile strength" is not the same as "hardness", it is not clear if Stroebel obtained his data from another article on the cited website or whether the presented hardness value was in error. Clarification is requested.

23. In any event, it is not clear how applicant has determined the claimed hardness data in "GPa" units. Typically hardness values are presented as values represented by standardized hardness scales (e.g. Brinell, Rockwell, Vickers, Knoop, etc. . .) and are obtained by specific hardness tests with specified indenters and loads. The applicant's disclosure does not shed light

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on how applicant's hardness values were determined and how they came to be presented in "GPa" units. It is not clear from applicant's specification what applicant's hardness values represent. Clarification of this issue is necessary in order to ascertain how to interpret the hardness data in the claims.

24. Regarding the data submitted as an attachment to the Strobel declaration, there appears to be no consistent comparison between the hardness data for applicant's composition and the hardness data for Sn - 1%Ag - 0.03% P. As noted in the attachment, there is the possibility that the tests results may have been affected by different conditions and the use of different instruments.

25. Also, while reference is made in the attachment of the Strobel declaration to a study in August 2001, the documentation of such study has not been provided although it appears integral to the understanding of the comparison data. In any event, comparison data appears to only begin at 2% Ag content and the broader range of the independent claims allow for down to just over 1% Ag. Comparison data for hardnesses and conductivity should begin between applicant's lower range endpoint (just over 1% Ag) and the points (e.g. 1% Ag) in the references.

26. In addition, it is not clear if the Strobel declaration's hardness data which appears to have been produced from ground and polished castings would be representative of the hardnesses of coatings. The declaration fails to compare the hardnesses of coatings produced by the processes of the references and coatings produced by the processes of applicant's disclosure. Since the

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process of coating may affect the segregation and crystal structure of the alloy, hardness measurements from castings of the alloy may not necessarily be representative of the hardness values of the coatings.

27. While applicant states Lupfer's coatings are an order of magnitude lower in hardness from applicant's coatings, the applicant does not make clear how such a conclusion was reached. The Strobel declaration does not clear up this issue since no coatings made by Lupfer's process were tested. As noted in the rejection, Lupfer discloses hot dipping copper based electrical components in a tin solder containing 2-10% silver (e.g. see column 2, lines 30-50; column 3, lines 2-5). It is a fairly well grounded assumption in the art that, unless proven otherwise, coatings of the same compositions made the same processes will have the same properties. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

28. The Strobel declaration also states that "articles which are dip soldered using Lupfer's molten solder bath are dip soldered below 221 degrees Centigrade". It is not clear how this

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information is relevant since this temperature refers to the bath temperature of a second solder composition (e.g. lead-tin solders which are kept below the melting temperature of the tin-silver alloy so as not to remelt the tin-silver alloy; e.g. see column 3, lines 14-33) and has no bearing on the actual bath temperatures used for initially applying the tin-silver alloys of Lupfer. In view of the fact that Lupfer uses tin containing 2-10% Ag, it is assumed that the bath temperatures used to apply these alloys must be at least their melting points. While it is clear that Lupfer prefers the tin-silver eutectic that melts at 221 °C, he clearly states that the use of up to 10% silver content is considered part of his invention. The melting point of an alloy is related to the composition of the alloy and as noted in applicant's specification on page 13, lines 19-22, the melting point of 95-5 tin-silver coating is in the range of 245-253 °C and the melting point of 90-10 tin-silver coating is 310 °C (590°F).

29. Applicant argues that the rejections of the claims under 35 U.S.C. 102(b) as being anticipated by Arai (U.S. Patent 5,902,472) or Arai (U.S. Patent 5,948,235) should be removed because the claims specify that the coating is "non-electroplated" and these references use electroplating. The examiner notes, however, that when there is a substantially similar product, as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct not the examiner to show that the same process of making, see *In re Brown*, 173 U.S.P.Q. 685, and *In re Fessmann*, 180 U.S.P.Q. 324. There is no factual evidence of record that coatings produced by all other processes than electroplating processes are physically and patentably distinct from the coatings of the Arai references. In any event, the coatings of Arai are solder coatings and are subjected to melting after being plated on substrates. The tin-

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silver solder coatings are subject to melting (e.g. see solderability tests in the Embodiments) and the melting step would leave tin-silver solder coatings with a final microstructure consistent with melted tin-silver alloy and not a microstructure associated with electroplating. In addition, there is no factual evidence of record that the electroplating baths of Arai would leave any residues inconsistent with coatings produced by non-electroplating processes.

30. Regarding the rejection of the claims over Brinkmann (U.S. Patent 5,075,176), applicant continues to argue that Brinkmann teaches a “laundry list” of possible candidates and does not teach a tin-silver binary system. The examiner notes, however, that Brinkman may teach a Markush group of possible systems, but Brinkman specifically singles out silver containing tin compositions in the examples and teaches endpoints directly in applicant’s claimed range (e.g. see Example 1 and claim 4). For instance, in Example 1, a tin composition containing 1% silver and a small amount of phosphorus (three tenths of a percent) is disclosed. It is noted that since there is no indication in Brinkmann’s “Detailed Description” that phosphorus has a function in the coating or is considered an additive for any reason, one of ordinary skill in the art would be lead to believe that the phosphorus in the example may simply be an impurity in the bath or at most may be an additive that is clearly not necessary to the tin-silver bath composition of Brinkmann and therefore may be omitted.

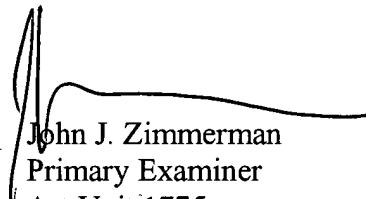
31. Regarding the IACS values of tin-silver and tin-silver-phosphorus, applicant is merely claims a composite and a method of making a composite. No articles (e.g. electrical contacts) are currently claimed where the electrical conductivity of the composition may be of importance

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in determining patentability. In any event no data for the IACS value of tin-silver alloy commensurate with the scope of the independent claims has been provided. It is of interest, however, that applicant's specification describes an IACS of 15.6% to be "excellent" (e.g. see page 12, lines 13-14) and this is essentially the same conductivity of Brinkmann's example (e.g. see 15.5% IACS given in the Strobel declaration).

Conclusion

32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Zimmerman whose telephone number is (703) 308-2512. The examiner can normally be reached on 8:30am-5:00pm, M-F. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


John J. Zimmerman
Primary Examiner
Art Unit 1775

jjz
November 6, 2003